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<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> d his nofile

(FILE 'HOME' ENTERED AT 20:23:37 ON 04 OCT 2002)

FILE 'REGISTRY' ENTERED AT 20:24:48 ON 04 OCT 2002

E PROTONATED ANTHRACENE/CN

E ANTHRACENE/CN

L1 1 SEA ANTHRACENE/CN

L2 E ANTHRACENE, PROTONATED/CN

1 SEA "ANTHRACENE, PROTONATED (2:1)"/CN

FILE 'HCA' ENTERED AT 20:29:01 ON 04 OCT 2002

L3 46629 SEA L1 OR ANTHRACENE#

L4 9699 SEA (POLYM# OR POLYMER? OR COPOLYM# OR COPOLYMER? OR
HOMOPOLYM# OR HOMOPOLYMER? OR TERPOLYM# OR TERPOLYMER?
OR RESIN? OR GUM#) (3A) (VOL# OR VOLUM?)

L5 83420 SEA (CHANG? OR VARY? OR VARIAB? OR VARIED OR ALTER OR
ALTERS OR ALTERED OR ALTERED OR ALTERING# OR ALTERING#
OR MODIF? OR INCREAS? OR ENLARG? OR AUGMENT? OR MORE OR
GREATER? OR HIGHER? OR LESS? OR REDUC? OR REDN# OR
DIMINISH? OR LOWER? OR DECREAS?) (2A) (VOL# OR VOLUM?)

L6 125133 SEA (CHANG? OR VARY? OR VARIAB? OR VARIED OR ALTER OR
ALTERS OR ALTERED OR ALTERED OR ALTERING# OR ALTERING#
OR MODIF? OR INCREAS? OR ENLARG? OR AUGMENT? OR MORE OR
GREATER? OR HIGHER? OR LESS? OR REDUC? OR REDN# OR
DIMINISH? OR LOWER? OR DECREAS?) (2A) PH

L7 27397 SEA (VIS OR VISIBLE?) (2A) (LIGHT? OR RADIA? OR IRRAD? OR
RAY# OR BEAM? OR ENERG? (2A) SOURC? OR WAVELENGTH? OR

Abduct

L8 3209 WAVE (2A) LENGTH?)
 SEA (L1 OR ANTHRACENE#) (3A) (PHOSPHORES? OR FLUORES? OR
 LUMINES? OR ILLUMINES? OR GLOW?)
 L9 22 SEA L3 AND L4
 L10 2 SEA L9 AND L5
 L11 1 SEA L9 AND L6
 L12 1 SEA L9 AND L7
 L13 1 SEA L9 AND L8
 L14 QUE POLYM# OR POLYMER? OR COPOLYM# OR COPOLYMER? OR
 HOMOPOLYM# OR HOMOPOLYMER? OR TERPOLYM# OR TERPOLYMER?
 OR RESIN? OR GUM#
 L*** DEL QUE (35 OR 36 OR 37 OR 38)/SX,SX
 L15 QUE (35 OR 36 OR 37 OR 38)/SX,SC
 L16 22 SEA L3 AND (L14 OR L15) AND L5
 D QUE STAT
 L17 2 SEA L9 AND L16
 L18 2 SEA L16 AND L4
 L19 2 SEA L16 AND L6
 L20 1 SEA L16 AND L7
 L21 2 SEA L16 AND L8
 L22 25 SEA L3 AND (L14 OR L15) AND PH AND (VOL# OR VOLUM?)
 L23 2 SEA L9 AND L16
 L24 2 SEA L9 AND L22
 L25 4 SEA L16 AND L22
 L26 7 S L22 AND (L4 OR L5 OR L6 OR L7 OR L8)
 L27 11 SEA L10 OR L11 OR L12 OR L13 OR L17 OR L18 OR L19 OR L20
 OR L21 OR L23 OR L24 OR L25 OR L26
 L28 18 SEA L9 NOT L27
 L29 15 SEA L16 NOT (L27 OR L28)
 L30 18 SEA L22 NOT (L27 OR L28 OR L29)
 L31 76 SEA L2 OR PROTONAT? (3A) (L1 OR ANTHRACENE#)
 L32 408551 SEA POLYELECTROLY? OR ELECTROLY?
 L33 QUE FIBER? OR FIBR? OR STRAND? OR RIBBON? OR FILAMENT?
 OR FILIFORM? OR THREAD?
 L34 3 SEA L31 AND L32
 L35 0 SEA L31 AND L33

FILE 'REGISTRY' ENTERED AT 20:52:10 ON 04 OCT 2002

L36 E ACRYLAMIDE/CN
 L37 1 SEA ACRYLAMIDE/CN
 1 SEA "ACRYLAMIDE HOMOPOLYMER"/CN
 E METHACRYLAMIDE/CN
 L38 1 SEA METHACRYLAMIDE/CN
 L39 1 SEA "METHACRYLAMIDE HOMOPOLYMER"/CN OR "METHACRYLAMIDE
 POLYMER"/CN
 L40 4 SEA (L36 OR L37 OR L38 OR L39)

FILE 'HCA' ENTERED AT 20:53:41 ON 04 OCT 2002

L41 135192 SEA L40 OR ?ACRYLAMID? OR ?ACRYL(2A)AMIDE?
 L42 0 SEA L31 AND L41
 L43 149 SEA L3 AND L41
 L44 1 SEA L43 AND PROTON?

D COST

FILE 'REGISTRY' ENTERED AT 20:56:15 ON 04 OCT 2002

=> file hca

FILE 'HCA' ENTERED AT 20:56:24 ON 04 OCT 2002

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FILE COVERS 1907 - 3 Oct 2002 VOL 137 ISS 15
FILE LAST UPDATED: 3 Oct 2002 (20021003/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d 144) ^{claim 37} 1 ibib abs hitstr hitind

L44 ANSWER 1 OF 1 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER: 102:167476 HCA

TITLE: Water-soluble photon-harvesting polymers: intracoil energy transfer in anthryl- and fluorescein-tagged poly(vinylpyrrolidinone) Hargreaves, John S.; Webber, Stephen E. Dep. Chem., Univ. Texas, Austin, TX, 78712, USA (Macromolecules (1985), 18(4), 734-40) CODEN: MAMOBX; ISSN: 0024-9297

DOCUMENT TYPE: Journal
LANGUAGE: English

AB A copolymer [95070-20-5] sol. in polar solvents (e.g., MeOH, H₂O) was prep'd. from 1-vinyl-2-pyrrolidinone 44, 9-phenyl-10-(4-vinylphenyl)anthracene (I) 0.42, and the thiourea from acrylamide and fluorescein isocyanate (II) 0.42 mmol. Absorption of light by I resulted in efficient intracoil sensitization of the 1st excited state of II. The quantum efficiency of this process was 0.4 in MeOH and 0.8 in H₂O,

corresponding to a smaller coil size in H₂O. The fluorescence decay showed intracoil energy transfer to be essentially static, and that anthryl aggregation can result in nonexponential decay, interpreted as a dynamic equil. between the 1st excited state of I and a nonfluorescent dimer state. Fluorescence quenching showed the polymers to be inhomogeneous, self-organizing into hydrophobic and hydrophilic regions.

- CC 36-5 (Physical Properties of Synthetic High Polymers)
 Section cross-reference(s): 73
 ST photon harvesting polymer; energy transfer intracoil copolymer;
 vinylpyrrolidone copolymer energy transfer; anthracene
 deriv polymer energy transfer; fluorescein deriv polymer energy
 transfer; fluorescence quenching polymer order
 IT 95070-20-5
 (proton-harvesting, intracoil energy transfer in)

=> d 134 ^{claim 34} 1-3 ibib abs hitstr hitind

L34 ANSWER 1 OF 3 HCA COPYRIGHT 2002 ACS
 114:194737 HCA
 ACCESSION NUMBER: Combined electrolysis-stopped flow
 TITLE: method (SFEL). The direct study of reaction
 kinetics with electrogenerated particles
 AUTHOR(S): Mairanovskii, V. G.; Samvelyan, S. Kh.
 CORPORATE SOURCE: All Union Sci. Res. Vitam. Inst., Moscow,
 117820, USSR
 SOURCE: J. Electroanal. Chem. Interfacial Electrochem.
 (1991), 302(1-2), 285-91 ✓
 CODEN: JEIEBC; ISSN: 0022-0728
 DOCUMENT TYPE: Journal
 LANGUAGE: English

- AB The direct study of the reaction kinetics consisting of a suitable
 combination of electrolysis and stopped-flow techniques
 with the spectrophotometric detection of particles is described. As
 an example, the anthracene electrochem. redn. was investigated in
 the presence of H₂O or phenol mols. as a proton source. The
 protonation kinetics was calcd. The method allows to study
 reactions characterized by the 1st order rate const. .ltoreq.50 s⁻¹
 and the 2nd order rate const. .ltoreq.106-108 s⁻¹.
 CC 72-2 (Electrochemistry)
 Section cross-reference(s): 22, 67, 80
 ST electrolysis stopped flow technique kinetics; electrode
 reaction chem complication kinetics; anthracene redn
 electrochem protonation kinetics
 IT Kinetics of protonation
 Protonation and Proton transfer reaction
 (in electrochem. redn. of anthracene, studied by combined
electrolysis-stopped flow method)
 IT Reduction, electrochemical
 (of anthracene, studied by combined electrolysis
 -stopped flow method)

- IT Electrode reaction
(studied by combined **electrolysis**-stopped flow method)
- IT Kinetics of reduction
(**electrochem.**, of anthracene, studied by combined **electrolysis**-stopped flow method)
- IT Kinetics, reaction
(**electrochem.**, studied by combined **electrolysis**-stopped flow method)
- IT 108-95-2, Phenol, uses and miscellaneous 7732-18-5, Water, uses and miscellaneous
(proton source, for **electrochem. redn.** of anthracene, studied by combined **electrolysis**-stopped flow method)
- IT 12408-02-5
(protonation and Proton transfer reaction, in **electrochem. redn.** of anthracene, studied by combined **electrolysis**-stopped flow method)
- IT 120-12-7, Anthracene, reactions
(**redn.** of, **electrochem.**, combined **electrolysis**-stopped flow method in study of)

L34 ANSWER 2 OF 3 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER: 93:94509 HCA

TITLE: Electrochemical hydrogenation of aromatic hydrocarbons. Discrimination between ECE and disproportionation mechanisms by double potential step chronoamperometry
Amatore, C.; Saveant, J. M.
CORPORATE SOURCE: Lab. Electrochim., Univ. Paris, Paris, 75221, Fr.

SOURCE: J. Electroanal. Chem. Interfacial Electrochem. (1980), 107(2), 353-64

CODEN: JEIEBC; ISSN: 0022-0728

DOCUMENT TYPE: Journal

LANGUAGE: English

- AB Double potential step chronoamperometry is a particularly sensitive method for distinguishing between electrode (ECE) and soln. (DISP) mechanisms; a characteristic hump appears on the anodic trace with the ECE mechanism. Application of the method to the **electrochem. hydrogenation of anthracene** or naphthalene in DMF contg. PhOH confirms that the DISP mechanism is operative for the 2nd electron transfer following **protonation of the anion radical**. The rates of protonation of the anion radicals are derived from the ratio of the anodic to cathodic current intensities. ECE mechanisms of org. reactions do not occur under conditions where the system can be made at least partially reversible. For very irreversible systems, irreversibility arising from the rapidity of the chem. step and/or slowness of mass transfer, the ECE path is followed. The validity of this rule is discussed and approaches for the characterization of ECE mechanisms are discussed.
- CC 22-5 (Physical Organic Chemistry)
Section cross-reference(s): 72
- ST double potential step chronoamperometry; hydrogenation mechanism

electrochem arom hydrocarbon; protonation kinetics anion radical;
anthracene anion radical protonation; naphthalene
 anion radical protonation

- IT Kinetics of protonation
 (of anthracene or naphthalene radical anions, double
 potential step chronoamperometry detn. of)
 IT Electrochemistry
Electrolysis
 (of arom. hydrocarbons, discrimination between ECE and
 disproportionation mechanisms for)

L34 ANSWER 3 OF 3 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

69:46981 HCA

TITLE:

Chemical mechanisms for injection of positive
 carriers into single crystals

AUTHOR(S):

Hoffmann, A. K.

CORPORATE SOURCE:

(Amer. Cyanamid Co., Stanford, Conn., USA
 Nature (1968), 218(5147), 1157-8)

SOURCE:

CODEN: NATUAS

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB

Two means for hole injection from soln. into solid anthracene are
 reported: by charge transfer complexes; and by potential-independent
 chem. reactions proceeding by H-transfer from protonated
anthracene to a H-atom acceptor. Limiting currents 2
 .times. 10⁻⁶, 7 .times. 10⁻⁸, and 1.6 .times. 10⁻⁶ amp./cm.² for
 oxidants FeCl₃.6H₂O, SbCl₃, TiCl₄, resp., were measured at a
 rotating Pt electrode, or by stirred soln. voltammetry at a Pt
 electrode, in the injection solvent, MeNO₃ or CH₂Cl₂, with
 Pr₄N⁺ClO₄⁻ as background electrolyte. Anthracene crystals
 70.mu. thick were used. Solns. of p-chloranil and C₆H₃(NO₂)₃ in
 CH₂Cl₂ were inactive. A chem. hole interaction mechanism is
 supported by: the large hole current (10⁻⁶ amp./cm.²) observed when
anthracene was immersed in anhyd. HF, greatly increased on stirring;
anthraquinone in 95% H₂SO₄ soln. injected holes into anthracene at a
 diffusion controlled rate. 17 references.

CC

71 (Electric Phenomena)

=> d 127 1-11 ibib abs hitstr hitind

b.b. claim 7

L27 ANSWER 1 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

134:208473 HCA

TITLE:

Phase separation of polymer mixtures
 induced by polarization-selective chemical
 reactions: spatial symmetry breaking and mode
 selection

AUTHOR(S):

Tran-Cong-Miyata, Q.

CORPORATE SOURCE:

Department of Polymer Science and Engineering,
 Kyoto Institute of Technology, Kyoto, 606-8585,
 Japan

SOURCE:

Macromolecular Symposia (2000), 160(Nonlinear

Dynamics in Polymer Science and Related Fields),
91-97
CODEN: MSYMEC; ISSN: 1022-1360
Wiley-VCH Verlag GmbH
Journal
English

PUBLISHER:
DOCUMENT TYPE:
LANGUAGE:

AB Phase sepn. of polystyrene/poly(vinyl Me ether) (PS/PVME) blends was induced and controlled by irradiation with linearly polarized light. The PS component was made photosensitive by chem. labeling with either anthracene or trans-stilbene. The former was used to crosslink the PS component whereas the latter induces phase sepn. by changing polymer segmental vols. The phase sepn. and reaction kinetics were obsd. and discussed in terms of mode-selection process.

CC 36-6 (Physical Properties of Synthetic High Polymers)

ST Section cross-reference(s): 35
polystyrene polyvinyl ether phase sepn light induced; polarized light induced polymer blend phase sepn

IT Polymer blends
(light-induced phase sepn. of functionalized polystyrene/poly(vinyl Me ether) blends)

IT 9003-09-2, Poly(vinyl methyl ether) 9003-53-6D, Polystyrene, anthracene or stilbene derivs.
(light-induced phase sepn. of functionalized polystyrene/poly(vinyl Me ether) blends)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 2 OF 11 HCA COPYRIGHT 2002 ACS
ACCESSION NUMBER: 133:336049 HCA
TITLE: Visible light pH

change for activating polymers
Becker, Carol A.
United States of America as Represented by the
Secretary of the Navy, USA
U.S., 11 pp.
CODEN: USXXAM
Patent
English

INVENTOR(S):
PATENT ASSIGNEE(S):
SOURCE:
DOCUMENT TYPE:
LANGUAGE:
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

US 6143138 A 20001107 US 1998-137008 19980820

AB A method comprises: forming a soln. contg. anthracene wherein the anthracene establishes a change in pH in the soln. upon irradiation with visible light; and irradiating the soln. with visible light of a wavelength and of an intensity to establish a pH change in the soln. The

parent app'l
~~see~~ Div.

pH change is rapid (nanoseconds) and long-lasting. The attendant pH change can be maintained by continuous wave light or by an appropriately pulsed light. Heat resulting from the light activation is efficiently discharged by radiative decay through room temp. phosphorescence lifetimes existing on the order of milliseconds. The pH change can cause a phase transition vol. change in some polymers which can be utilized in robotics, esp. for synthetic muscles.

IT 120-12-7, Anthracene, properties
(visible light pH change
for activating polymers)
RN 120-12-7 HCA
CN Anthracene (8CI, 9CI) (CA INDEX NAME)

IC ICM C07C001-00
NCL 204157150
CC 37-6 (Plastics Manufacture and Processing)
ST anthracene irradiatn pH change
polymer gel; vol change photoactivated
polymer gel
IT Contraction (mechanical)
pH
(visible light pH change
for activating polymers)
IT 9003-05-8, Polyacrylamide 26299-60-5, Acrylic acid-vinyl alcohol
copolymer
(visible light pH change
for activating polymers)
IT 120-12-7, Anthracene, properties
(visible light pH change
for activating polymers)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L27 ANSWER 3 OF 11 HCA COPYRIGHT 2002 ACS
ACCESSION NUMBER: 132:116838 HCA
TITLE: Investigation of the properties of
hypercrosslinked polystyrene as a stationary
phase for high-performance liquid chromatography
AUTHOR(S): Penner, N. A.; Nesterenko, P. N.; Ilyin, M. M.;
Tsyurupa, M. P.; Davankov, V. A.
CORPORATE SOURCE: Analytical Chemistry Division, M. V. Lomonosov
Moscow State University, Moscow, 119899, Russia
SOURCE: Chromatographia (1999), 50(9/10), 611-620

PUBLISHER:
DOCUMENT TYPE:
LANGUAGE:

CODEN: CHRGB7; ISSN: 0009-5893
Friedrich Vieweg & Sohn Verlagsgesellschaft mbH
Journal
English

- AB The mech. rigidity, swelling properties, adsorption selectivity, and chromatog. performance of hypercrosslinked polystyrene (mainly MN 200 or Purosep 200; Purolite, UK) were studied to evaluate the use of the material as a stationary phase for reversed-phase HPLC (RPHPLC). Using inverse size-exclusion chromatog. (SEC) this adsorbent, with a high sp. surface area of 1500 m² g⁻¹ has a biporous structure with micropores of .apprx.1-2 nm and macropores .apprx.100 nm in diam. The polymer does not change its vol. significantly on changing water for org. solvents. The retention increments for methylene and Ph groups were calcd. and indicated that the mechanism of retention on the hypercrosslinked polystyrene involves .pi.-.pi. interactions and strong hydrophobic interactions. The column performance of the hypercrosslinked polystyrene is acceptable, with reduced plate height increasing very slowly as the linear velocity of the mobile phase increased to high values (up to 20-45 cm min⁻¹). Columns contg. hypercrosslinked polystyrene were evaluated for the sepn. of phenols, dialkyl phthalates, and polyarom. compds. On-column preconcn. of trace org. compds. from aq. media is possible. With smaller particles of hypercrosslinked polystyrene becoming available, this material can be regarded as an alternative to alkylsilica as a hydrolytically stable column-packing material for RPHPLC.
- IT 120-12-7, Anthracene, analysis
(hypercrosslinked polystyrene as stationary phase for high-performance liq. chromatog. of)
- RN 120-12-7 HCA
- CN Anthracene (8CI, 9CI) (CA INDEX NAME)

- CC 80-4 (Organic Analytical Chemistry)
Section cross-reference(s): 37, 66
- IT 50-32-8, Benz[a]pyrene, analysis 51-28-5, 2,4-Dinitrophenol, analysis 51-92-3, Tetramethylammonium 53-70-3, Dibenz[a,h]anthracene 56-55-3, Benz[a]anthracene 62-53-3, Aniline, analysis 65-85-0, Benzoic acid, analysis 71-43-2, Benzene, analysis 77-92-9, Citric acid, analysis 79-14-1, Glycolic acid, analysis 83-32-9, Acenaphthene 84-66-2, Diethyl phthalate 85-01-8, Phenanthrene, analysis 86-73-7, Fluorene 88-75-5, o-Nitrophenol 90-15-3, 1-Napththol 91-20-3, Naphthalene, analysis 95-47-6, o-Xylene, analysis 95-53-4, o-Toluidine, analysis 95-95-4, 2,4,5-Trichlorophenol 98-06-6, tert-Butylbenzene 100-02-7, p-Nitrophenol, analysis 100-41-4,

Ethylbenzene, analysis 106-44-5, p-Cresol, analysis 108-88-3,
 Toluene, analysis 108-95-2, Phenol, analysis 109-73-9,
 Butylamine, analysis 109-89-7, Diethylamine, analysis
 120-12-7, **Anthracene**, analysis 120-83-2,
 2,4-Dichlorophenol 129-00-0, Pyrene, analysis 131-11-3, Dimethyl
 phthalate 131-16-8, Di-n-propyl phthalate 135-19-3, 2-Naphthol,
 analysis 150-76-5, p-Methoxyphenol 191-24-2, Benzo[ghi]perylene
 193-39-5, Indeno[1,2,3-cd]pyrene 205-99-2,
 Benz[e]acephenanthrylene 206-44-0, Fluoranthene 207-08-9,
 Benzo[k]fluoranthene 208-96-8, Acenaphthylene 218-01-9, Chrysene
 6915-15-7, Malic acid

(hypercrosslinked polystyrene as stationary phase for
 high-performance liq. chromatog. of)

REFERENCE COUNT:

39

THERE ARE 39 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L27 ANSWER 4 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

118:82615 HCA

TITLE:

Light scattering and fluorescence studies of
 block **copolymer** micelles of
 polystyrene-block-poly (hydrogenated isoprene)
 in the selective solvent 1,4-dioxane-n-heptane
 Prochazka, Karel; Medhage, Bo; Mukhtar, Emad;
 Almgren, Mats; Svoboda, Petr; Trnena, Jitka;
 Bednar, Bohumil

AUTHOR(S):

CORPORATE SOURCE:

Fac. Sci., Charles Univ., Prague, 128 40, Czech.
 Polymer (1993), 34(1), 103-10

SOURCE:

CODEN: POLMAG; ISSN: 0032-3861

DOCUMENT TYPE:

Journal

LANGUAGE:

English

AB

Hydrogenated diblock butadiene-styrene rubbers (Kraton G1701) was
 fluorescence labeled by random covalent attachment of
anthracene at the polystyrene block (the av. no. of
anthracenes per **copolymer** chain was 0.88).
 Micellization of the labeled rubber was studied in a broad compn.
 range of the solvent mixt. 1,4-dioxane/heptane. Micelles with
 polystyrene cores are formed in heptane-rich solvents (0-30 vol %
 1,4-dioxane). In mixts. with 30-50 vol % 1,4-dioxane, the sample
 dissolves molecularly in the form of individual **copolymer**
 coils and in dioxane-rich solvents (more than 50
 vol % 1,4-dioxane), micelles with polystyrene shells are
 formed. Micellar solns. were characterized by static and
 quasielastic light scattering and by sedimentation velocity
 measurements. The mobility of pendant fluorophores and
polymer segments in micellar cores and shells in selective
 solvents and in individual **copolymer** coils in good
 solvents was studied by time-resolved fluorescence-anisotropy
 measurements.

CC

IT

39-12 (Synthetic Elastomers and Natural Rubber)
Fluorescence

(anisotropic, of **anthracene-labeled hydrogenated**

- diblock SBR in dioxane-heptane solvent systems, micellization in relation to)
- IT Chains, chemical
(dynamics and mobility of, **anthracene**-labeled hydrogenated diblock SBR in dioxane-heptane solvent systems, micellization in relation to)
- IT Micelles
(formation of, of **anthracene**-labeled hydrogenated diblock SBR, in dioxane-heptane solvent systems, light scattering and fluorescence study of)
- IT Rubber, butadiene-styrene, properties
(hydrogenated, block, diblock, micellization of **anthracene**-labeled Kraton G1710, in dioxane-heptane solvent systems, light scattering and fluorescence study of)
- IT 142-82-5, Heptane, properties
(dioxane mixts., micellization of **anthracene**-labeled hydrogenated diblock SBR in, light scattering and fluorescence study of)
- IT 123-91-1, 1,4-Dioxane, properties
(heptane mixts., micellization of **anthracene**-labeled hydrogenated diblock SBR in, light scattering and fluorescence study of)
- IT 106107-54-4
(rubber, hydrogenated, block, diblock, micellization of **anthracene**-labeled Kraton G1710, in dioxane-heptane solvent systems, light scattering and fluorescence study of)

L27 ANSWER 5 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER: 113:153474 HCA

TITLE: Effect of a coalescing aid on **polymer** diffusion in latex films

AUTHOR(S): Wang, Yongcai; Winnik, Mitchell A.

CORPORATE SOURCE: Erindale Coll., Univ. Toronto, Toronto, ON, M5S 1A1, Can.

SOURCE: Macromolecules (1990), 23(21), 4731-2

CODEN: MAMOBX; ISSN: 0024-9297

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Latex films were prep'd. from 1:1 mixts. of phenanthrene-labeled and **anthracene**-labeled 100-nm poly(Bu methacrylate) dispersions. The films were annealed at 95.degree. under N. The extent of **polymer** diffusion across the particle boundary was followed using fluorescence decay measurements of the extent of direct nonradiative energy transfer. These expts. yielded, as a function of annealing time, the vol. fraction of mixing fm, from which were calcd. the cumulative **polymer** diffusion coeffs. D. Both fm and D were enhanced when small amts. of a coalescing aid (2,2,4-trimethyl-1,3-pentanediol monoisobutyrate) were allowed to equilibrate with the dispersion prior to film formation. The entirety of this effect can be explained by the tendency of the additive to act as a plasticizer to **increase** the free vol. of the film.

CC 36-5 (Physical Properties of Synthetic High Polymers)
IT Fluorescence

(from phenanthrene- or anthracene-labeled poly(Bu methacrylate) in annealed latex films, diffusion detd. by)
IT 9003-63-8D, Poly(butyl methacrylate), phenanthrene- or anthracene-labeled
(diffusion of, in annealed films from dispersion, coalescing agent effect on, fluorescence decay study of)

L27 ANSWER 6 OF 11 HCA COPYRIGHT 2002 ACS
ACCESSION NUMBER: 96:181941 HCA

TITLE: Studies of polymer electrets. II.
Factors governing the stabilities of homoelectrets obtained from polystyrene and its derivatives
Mishra, Anu
Uniroyal Res. Lab., Guelph, ON, Can.
J. Appl. Polym. Sci. (1982), 27(4), 1107-18
CODEN: JAPNAB; ISSN: 0021-8995
DOCUMENT TYPE: Journal
LANGUAGE: English

AB polystyrene (I) [9003-53-6] and its various alkyl and halo derivs. were studied as homoelectrets and their stabilities under different environmental conditions detd. The stabilities of the homoelectrets prep'd. from these polymers depended on their vol . resistivities, glass transition temps., and interactions with electron-acceptor impurities. Excellent stabilities were exhibited by the homoelectrets prep'd. from I, poly(vinyltoluene) [9017-21-4], poly(chlorostyrene) [9053-30-9], and poly(tert-butylstyrene) [51154-97-3]. It is postulated that the charged particles are trapped by the .pi.-orbitals of the Ph rings present in these polymers and that they are adversely affected by the presence of electron-acceptor compds. that generally form charge-transfer complexes with the Ph groups. The 1:1 copolymer electrets of styrene, vinyltoluene, and tert-butylstyrene do not offer any advantage over their homopolymers.

IT 120-12-7, uses and miscellaneous
(polystyrene electrets contg., stability of)
RN 120-12-7 HCA
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



CC 36-5 (Physical Properties of Synthetic High Polymers)
ST Section cross-reference(s): 76
polystyrene electret stability; styrene polymer electret stability; chlorostyrene polymer electret stability;

- electron donor polystyrene electret
 IT Electric resistance
 Glass temperature and transition
 (of styrene **polymer** electrets, environmental stability
 in relation to)
 IT Electrets
 (styrene and styrene deriv. **polymers**, stability of,
 effect on glass transitions and electron acceptors on)
 IT Humidity
 (relative, environmental stability of styrene **polymer**
 electrets in relation to)
 IT Chains, chemical
 (side, of styrene **polymer** electrets, stability in
 relation to)
 IT 98-83-9, uses and miscellaneous 102-85-2 120-12-7, uses
 and miscellaneous 670-54-2, uses and miscellaneous 3028-88-4
 7553-56-2, uses and miscellaneous
 (polystyrene electrets contg., stability of)
 IT 7732-18-5, vapor
 (stability of styrene **polymer** electrets in presence of)

L27 ANSWER 7 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER: 76:111691 HCA
 TITLE: Fermentation of **anthracene** to
 3-hydroxy-2-naphthoic acid

INVENTOR(S): Brillaud, Andre R.
 PATENT ASSIGNEE(S): Sun Oil Co.
 SOURCE: U.S., 4 pp.
 CODEN: USXXAM

DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3634192	A	19720111	US 1966-531332	19660303

AB **Anthracene** is converted to 3-hydroxy-2-naphthoic acid by the action of *Pseudomonas* species ATCC 19,286 at 25-35.degree. and pH 6-8 for 24-120 hr. Fermentation in the presence of an anion exchange **resin** results in more rapid accumulation and higher yields of 3-hydroxy-2-naphthoic acid. Thus, 12 cultures of microorganisms capable of growing on **anthracene** as the sole C source were compared with the ATCC 19,286 microorganism. A series of runs was carried out with the microorganisms in 300 ml shake flasks at 30.degree. using 100 ml of a salt mixt. contg. CaCl2 0.02, FeSO4 0.005, KH2PO4 0.4, MgSO4 0.2, MnCl2 0.002, Na2HPO4 0.6, NaMoO4 0.001, and NH4NO3 2.0 g/l. At the beginning 1 g of **anthracene** was added to each and the medium was inoculated with 1% by vol. of each culture. The initial pH was 7.0 and the pH decreased as fermentation proceeded. After max. yields of carboxylic acid product were

reached and the fermentation ceased, the mixt. was made more strongly acidic by addn. of HCl. The product was extd. therefrom the Et2O. Anal. was done by paper chromatog. and uv spectroscopy. All the microorganisms produced 3-hydroxy-2-naphthoic acid as the only accumulated product. The 12 microorganisms each required 6-8 days to reach max. yield of 0.7-0.8 g/l., whereas the ATCC 19,286 microorganisms required 1 day to reach a yield of 1 g/l. Addn. of anion exchange resin to three 1-day-old ATCC 19,286 cultures prep'd. as above resulted in yields of 20, 23, and 24 g/l. after 6, 5, and 5 days resp., corresponding to a daily av. of 3.3, 4.6, and 4.8 g/l.

IC

NCL 195028000

CC 16 (Fermentations)

ST anthracene naphthoate Pseudomonas

IT Anion exchangers

(hydroxynaphthoic acid fermentation from anthracene stimulation by)

IT Pseudomonas

(hydroxynaphthoic acid manuf. by, from anthracene)

IT Fermentation

(hydroxynaphthoic acid, from anthracene Pseudomonas)

IT 92-70-6P

(manuf. of, from anthracene by Pseudomonas)

L27 ANSWER 8 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

76:104494 HCA

TITLE:

Aqueous two-phase system of dextran/hydroxypropyldextran as a model in adsorption studies of Sephadex gels

AUTHOR(S):

Lampert, K.; Determann, H.

CORPORATE SOURCE:

Bad. Anilin und Sodafabr. A.-G., Ludwigshafen/Rh., Ger.

SOURCE:

J. Chromatogr. (1971), 63(2), 420-2

DOCUMENT TYPE:

CODEN: JOCRAM

LANGUAGE:

Journal
English

AB

At ionic strength 0.2 with increasing pH (3.04-5.60) in the 2-phase, aq.-soln. system [dextran 500 (mol. wt. 500,000)]-[hydroxypropyldextran (HPD) (mol. wt. 546,000)] system, the greater distribution of BzOH in the HPD decreased towards an almost equal partition in both phases; the obsd. pK for BzOH was 4.4. A similar pH dependence of low-mol.-wt. ionizable compds. was obsd. (Brook, A. J. W.; Housley, S.; 1969) in adsorption gel chromatog. on Sephadex gels, for which the aq. dextran-HPD system provides a simple model. In the elution from Sephadex LH-20 gel with EtOCH2CH2OH as eluant, the elution vols. increased in the order: anthracene < cyclohexane < PhOH < glucose < water.

CC

68 (Phase Equilibriums, Chemical Equilibriums, and Solutions)

ST

Section cross-reference(s): 66
dextran hydroxypropyldextran chromatog model; Sephadex elution

- glycol ethers; benzoic acid partition **polymer**
 IT Chromatography, gel
 (of ionizable low mol. wt. compds., on Sephadex gels, **pH**
 effects on)
 IT 9078-46-0
 (distribution of benzoic acid between dextran and aq., **pH**
 effects on, gel chromatog. in relation to)
 IT 9004-54-0, properties
 (distribution of benzoic acid between hydroxypropyldextran and
 aq., **pH** effects on, gel chromatog. in relation to)
 IT 65-85-0, properties
 (distribution of, in dextran-hydroxypropyldextran aq. systems,
pH effects on, gel chromatog. in relation to)

L27 ANSWER 9 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

70:12095 HCA

TITLE:

Radioluminescence of styrene solutions during
 polymerization

AUTHOR(S):

Polacki, Zenon; Grodel, Marian

CORPORATE SOURCE:

Gdansk Tech. Univ., Gdansk, Poland

SOURCE:

Proc. Int. Conf. Lumin. (1968), Meeting Date
 1966, Volume 1, 586-8. Editor(s): Szigeti, G.
 Akad. Kiado: Budapest, Hung.

CODEN: 20LDAU

DOCUMENT TYPE:

Conference

LANGUAGE:

English

- AB The intensity of radioluminescence of styrene solns. during polymn.
 was examd. as a function of p-terphenyl, ".alpha.-NPO," and
anthracene concns. At the beginning of the polymn. process,
 the established self-quenching conditions are satisfied, and the
 change of radioluminescence depends on the decrease in the no. of
 mols./unit vol. due to **polymn.** In the
 high-viscosity region, the self-quenching process decreases, hence a
 marked increase in efficiency occurs. When polymn. continues, the
 amt. of styrene decreases and causes a decrease in the efficiency of
 the soln. The effect of the luminophore on the mech. properties of
 polystyrene is negligible.
 CC 35 (Synthetic High Polymers)
 ST radioluminescence styrene solns **polymn**; styrene solns
 radioluminescence **polymn**; terphenyl vs styrene solns luminescence;
anthracene vs styrene solns **luminescence**

L27 ANSWER 10 OF 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

53:14273 HCA

ORIGINAL REFERENCE NO.:

53:2661i,2662a-i,2663a-b

TITLE:

Soviet syntans

AUTHOR(S):

Mikhailov, A. N.

SOURCE:

Kozarstvi (1957), 7, 99-105

DOCUMENT TYPE:

Journal

LANGUAGE:

Unavailable

- AB Russian work on syntans is reviewed and reasons for their tanning
 ability are given. Two important criteria of tanning ability are

the retention of the original vol. of the pelt (vol. yield) and raising of the shrink temp. (T8). A low apparent d. indicates a high vol. yield. Extn. of leather with aq. acetone removes practically all tannin, indicating that few covalent bonds are present. The ionic reaction of phenolic OH groups with lysine and arginine residues helps to tan hides. If H bonds are formed, such reaction is possible with arginine but not with lysine, hence deamination has no influence on tanning with phenolic OH groups. Single-ring phenols do not raise T8 and are removed from the pelt by washing. The fixation of aromatic compds. by macromol. compds. has been studied with dyes on cellulose. Fixation occurs if there is a long, uninterrupted chain with a double bond between the functional groups and if the aromatic rings are coplanar. The same principle governs tannin fixation. The increased tanning effect with a larger no. of conjugated double bonds and coplanar rings was studied by Golubev (Dissertation, 1952). The 1,5-, 1,7-, and 2,6-dihydroxynaphthalenes have 1, 2, and 3 double bonds, resp., in the chain of the copolymer, and give leathers with T8 of 73, 78, and 90.degree., and apparent ds. of 0.70, 0.61, and 0.52. 4,4'-Dihydroxybiphenyl has 4 double bonds, but the rings are not coplanar; hence it produces leather with T8 of 67.degree. and apparent d. 0.80. These tannages were done at pH 4.0. More aromatic compds. have been studied by M. The best tanning agents are 4,4'-dihydroxytriphenylmethane and 2,2',4,4'-tetrahydroxytriphenylmethane, which give T8 of 85 and 92.degree., resp., and very high vol. yields. Catechin and ethyl digallate have no tanning value. Syntans possess the best tanning activity if the phenolic rings are linked through -CH2- or -CH(C6H5) groups. If sulfone (-SO2-) or carbonyl (-C=O-) bridges are present, the tanning activity is lowered. In the light of this theory, the formation of -CH2- bridges in syntans by condensation with HCHO is very effective and decidedly better than sulfone bridges. The use of dihydroxydiphenyl sulfone is economically correct, but there should be an addnl. condensation with HCHO. Formation of -SO3H groups by sulfonation is one way to obtain soly. These groups are centers of fixation of syntans to pelt, but such fixation does not give a good structure, and T8 is lowered as well as the resistance of the leather to enzymes. These undesirable effects can be minimized by prechroming the pelt, but the undesirable effects of -SO3H groups as meta-orienting substituents remain and paralyze the tanning function of phenolic OH groups. One -SO3H for 2-4 phenolic rings is enough to impart soly. to syntans. When a novolak was sulfonated with 0.9, 0.5, 0.4, and 0.3 moles H2SO4/aromatic ring, the vol. yields (cc./100 g. protein) of leathers tanned with these sulfonated novolaks were 220, 301, 322, and 373, resp. Omega sulfonation is better. By using 0.5 mole Na2SO3/ aromatic ring, a vol. yield of 348 was obtained, compared to 301 with 0.5 mole H2SO4. The dispersion of sulfonated novolaks in sulfoaromatic acids is useful, and leathers tanned with such dispersions have vol. yields that approach vegetable-tanned leathers. Bresler and Mikhailov (unpublished) studied fractional tanning with vegetable tanning exts. Four

portions of hide powder were added successively to a soln. of a vegetable ext. These removed 10, 14, 33.7, and 39.8% of available tannin. Coeffs. of vol. yield (vol. of leather/vol. of pelt) were 89.3, 70.0, 34.4, and 22.0, resp., and T8 values were 81, 79, 67, and 63.degree.. When the -SO₃H group of syntans reacts with protein, the pH of the liquor rises, and the detn. of tannin in such syntans by the hide-powder method is impaired. Presence of buffer salts in syntans is useful; they are improved by neutralization and subsequent addn. of AcOH. Auxiliary syntan AN, made from **anthracene**, is deficient in that it imparts a dark color to leather. Auxiliary syntan NK is made by condensing naphthalenesulfonic acid with HCHO. Exchange syntans PL, No. 3, and SPS contain lignosulfonic acid. The Ca salts of lignosulfonic acid from hard woods of cellulose are fermented to alc. and purified with (NH₄)₂CO₃. PL is made by condensing Optol (same as Diphen) with HCHO, sulfonating, adding lignosulfonic acid, drying. No. 3 is made a little differently, by using cryst. phenol. SPS is made from phenols from Baltic shales, which are high in resorcinol. Their condensation is so rapid that lignosulfonic acid is added as a moderator. No. 3 and SPS contain more than 50% lignosulfonic acid. Exchange syntan PS is made by condensing Optol with HCHO in the presence of a little H₂SO₄, and then omega-sulfonating with Na₂SO₃, condensing with HCHO, and acidifying with H₂SO₄ and lactic acid. Hexametaphosphate is added, and the product is dried. No. 5 is made from phenols from Russian soft coal; otherwise it corresponds to PS. Exchange syntan No. 4 is made from a polyphenol, probably Optol, and 2-naphtholsulfonic acid condensed with HCHO, brought to pH 4.0-4.2 with NH₃, omega-sulfonated by Na₂SO₃, acidified with lactic acid, and dried. The ratio of tannin to sol. matter at pH 3.5 in PL, SPS, No. 3, PS, No. 5, and No. 4 is 52-6, 47-50, 53-5, 66-7, 53-5, and 60-2. The leathers produced have T8 74-6, 76-8, 80-4, 80-2, 78-80, and 77-9.degree.. The coeff. of vol. yield is higher than 100 in all cases. Auxiliary syntans would be unnecessary if exchange syntans would dissolve the sludge of vegetable tannins, but so far only No. 4 has this capacity.

CC. 29 (Leather and Glue)

L27 ANSWER 11 of 11 HCA COPYRIGHT 2002 ACS

ACCESSION NUMBER:

51:1489 HCA

ORIGINAL REFERENCE NO.:

51:236g-1,237a-i,238a-i,239a-c

TITLE:

Small-ring compounds. XV. Methylenecyclobutene and related substances

AUTHOR(S):

Appelquist, Douglas E.; Roberts, John D.

CORPORATE SOURCE:

California Inst. of Technol., Pasadena

SOURCE:

J. Am. Chem. Soc. (1956), 78, 4012-22

DOCUMENT TYPE:

CODEN: JACSAT; ISSN: 0002-7863

LANGUAGE:

Journal

Unavailable

AB

cf. C.A. 50, 14568a. CH₂:C(CH₂Cl)₂ (I), b. 134-7.degree., n_D24 1.4748, was prepd. in 26% over-all yield from 136 g. pentaerythritol by the method of Mooradian and Cloke (C.A. 39, 32493). Cl bubbled

rapidly with cooling and stirring during 2.5 hrs. into 181.0 g. CH₂:CMeCH₂Cl and the mixt. distd. gave 141.0 g. dichloro compds., b. 58-68.degree., 35.5 g. MeCCl(CH₂Cl)₂, b. 68-85.degree. (mostly 82-5.degree.), and 60.0 g. residue. The 1st fraction fractionated gave 36.1 g. ClCH₂CMe:CHCl, b₅₀ 54-5.degree., n_D26 1.4694, and 48.4 g. I, b₅₀ 59.6-60.8.degree., n_D26 1.4735. I (12.5 g.) and 16.0 g. CH₂(CO₂Et)₂ added dropwise with stirring to 8.6 g. K in 140 cc. dry, refluxing Me₃COH during about 3.5 hrs., the mixt. heated 1 hr., and neutralized with about 3.5 cc. AcOH, about 100 cc. solvent distd. off, the residual mixt. dild. with 80 cc. H₂O and with C₆H₆, and the org. layer worked up and distd. gave 9.0 g. material, b_{0.2} 35-100.degree., and 14.0 g. dark viscous liquid residue; the distillate redistd. gave about 37% CH₂(CO₂Et)₂ and 0.85 g. material, b₁₂ 142-4.degree., n_D25 1.4628. CH₂:C(CO₂Et)₂ (228.6 g.), b. 203-10.degree., refluxed 9 hrs. with 187 g. anthracene, poured into 1200 cc. C₆H₆, and cooled gave 20 g. crude anthracene, m. 204-12.degree., the filtrate dild. with excess EtOH, the C₅H₆ boiled off, and the final soln. (about 400 cc.) cooled gave 314.2 g. di-Et 9,10-ethano-9,10-dihydroanthracene-11,11-dicarboxylate (II), m. 110-24.degree. (all m.p.s. are cor.). II (15.8 g.) in 180 cc. Et₂O added slowly with stirring to 3.0 g. LiAlH₄ in about 180 cc. dry Et₂O, the mixt. refluxed with stirring overnight, cooled to room temp., and treated dropwise with 15 cc. H₂O and then with 5 g. concd. H₂SO₄ in 50 cc. H₂O, the aq. layer extd. with Et₂O, and the combined Et₂O layer and ext. worked up yielded 10.5 g. 9,10-ethano-9,10-dihydro-11,11-bis(hydroxymethyl)anthracene (III), white crystals, m. 171-2.2.degree.; a sample heated above 300.degree. decompd. violently at about 330.degree.. III (139 g.), m. 170.4-1.6.degree., in 600 cc. dry pyridine treated dropwise at 30.degree. with 224 g. PhSO₂Cl, and the mixt. stirred at room temp. overnight, poured into a porcelain crock contg. 1850 cc. MeOH, 930 cc. H₂O, and 730 cc. concd. HCl, stirred with a pestle, and cooled gave 272.9 g. dibenzenesulfonate (IV) of III, m. 144.5-5.9.degree. (from Me₂CO-EtOH). IV (16.4 g.), 31.8 g. NaBr, 0.318 g. Na₂CO₃, and 60 cc. (HOCH₂CH₂)₂O heated 18 hrs. with stirring at 150.degree., poured into 180 cc. H₂O, and the crude ppt. (11.1 g.) recrystd. from EtOH gave 9.49 g. bis(CH₂Br) analog (V) of III, m. 150.0-50.8.degree. (from EtOH). Shorter reaction times or lower NaBr concns. gave incomplete reaction; unchanged IV, and the monobromobenzenesulfonate ester, m. 173.6-5.4.degree. (from C₆H₆-EtOH), were isolated. EtMe₂COH (50 cc.) and 1.31 g. K refluxed 5.5 hrs., treated with 5.40 g. CH₂(CO₂Et)₂ and then 4.4 g. V, and the mixt. refluxed 171 hrs. with stirring, neutralized with AcOH, and dild. with 30 cc. H₂O gave 48% unchanged V; the org. layer distd. and the volatile material redistd. gave a mixt. of CH₂(CO₂Et)₂ and EtMe₂C malonates; the nonvolatile residue refluxed 2 days with 10 cc. 6N HCl and evapd., the residue dissolved in excess 10% aq. NaOH, and the soln. treated with Norit and acidified gave 57 mg. 2,3,5,6-dibenzospiro(bicyclo[2.2.2]octane-7,1'-cyclobutane)-3',3'-dicarboxylic acid (VI), m. 188.7-9.8.degree. with gas evolution, and 60 mg. dark insol. residue. The residue from the mother liquor of the final recrystn. of VI sublimed at 155.degree.

and 0.2 mm. overnight gave 0.026 g. crude (10 mg. purified) 2,3,5,6-dibenzospiro(bicyclo[2.2.2]octane-7,1'-cyclobutane)-3'-carboxylic acid (VII), m. 151.8-68.degree., probably a mixt. of cis and trans isomers. VII (1.56 g.) heated 35 min. under a very slow stream of N at 350.degree. gave 0.52 g. 3-methylenecyclobutanecarboxylic acid (VIII), b11 102.5-103.degree., nD25 1.4664. VIII (4.47 g.) in 20 cc. CHCl3 and 5.49 g. SOCl2 refluxed overnight and distd. gave 4.27 g. crude acid chloride (IX) of VIII, b82 71-90.degree. [anilide, m. 146.7-7.8.degree. with shrinking at 145.5.degree. (from aq. EtOH)]. IX (26 g.) in 100 cc. Me2CO treated with cooling and swirling with 15.8 g. NaN3 in 45 cc. H2O, the mixt. poured into 300 cc. H2O and extd. with 50 cc. C6H6, the ext. added to 400 cc. refluxing abs. EtOH, the mixt. refluxed 0.5 hr., this process repeated by addn. of 4 more batches of azide to the same EtOH soln. using a total of 122.3 g. IX and 74 g. NaN3, and the soln. evapd. in vacuo gave 147.3 g. 1-NHCO2Et analog (X) of VIII, m. 58-9.degree. (from cyclohexane). Crude X (50 g.) and 144 g. KOH in 400 cc. MeOH refluxed 2 hrs., cooled, dild. with 1500 cc. H2O, and extd. with CH2Cl2, the org. ext. extd. with 3 moles 3N HCl, the acidic soln. basified with 140 g. NaOH in 300 cc. H2O and extd. with 600 cc. Et2O, and the Et2O ext. worked up gave 10 g. 1-NH2 analog (XI) of VIII, b. 107-8.degree., nD24 1.4662 [benzamide deriv., m. 145.5-6.4.degree. with shrinking at 144.degree. (from aq. EtOH)]. XI (13.5 g.) in 30 cc. MeOH treated slowly with stirring with 96 g. MeI in 100 cc. MeOH and then dropwise with 27.2 g. KOH in 130 cc. MeOH at such a rate that the temp. remained at 30-5.degree., the mixt. refluxed 3 hrs., the solvent removed in vacuo at 40.degree., and the solid residue extd. 3 days in a Soxhlet app. with CHCl3 gave 36.4 g. trimethylammonium iodide analog (XII) of XI, m. 207.6-8.1.degree. with shrinking at 205.degree. (from abs. EtOH). XII (36.2 g.) in the min. amt. of H2O treated with a suspension of Ag2O from 53.0 g. AgNO3 in H2O and 20.7 g. KOH, the mixt. shaken until the supernatant soln. was clear and filtered rapidly with suction under N, the filtrate concd. to about 50 cc. in vacuo at 30.degree. and added dropwise to a flask evacuated to 46 mm. and heated to 160.degree., the distillate collected in an attached Dry Ice trap, treated with 200 cc. N HCl, and the org. phase worked up gave 5.82 g. methylenecyclobutene (XIII), b. 35. 0-5.2.degree., nD25 1.4482. Methylenecyclobutane (0.6272 g.) in 20 cc. AcOH hydrogenated over 0.0553 g. PtO2 absorbed 250 cc. (104% for 1 C:C bond) H in 1115 min., the mixt. treated with a slow stream of N, the exit gas passed through concd. aq. NaOH, CaCl2, and NaOH, and condensed in a Dry Ice trap gave 0.44 g. methylcyclobutane (XIV), clear liquid. XIII (0.5056 g.) in AcOH hydrogenated over 0.0550 g. PtO2 absorbed in 100 min. 378 cc. H (96% for 2 C:C bonds) and gave 0.32 g. XIV. Crude dl-pinic acid (3.40 g.), m. 80-96.degree., in 7 cc. H2SO4 treated with stirring with 27.2 cc. 1.47M HN3 in CHCl3 below 45.degree., the mixt. stirred 7 hrs. at 45-7.degree., treated again with 6 cc. NH3 soln., heated 3 hrs. (1600 cc. gas evolved), cooled, and dild. with ice, the aq. layer washed with Et2O, basified with NaOH, and extd. 2 days with Et2O, the Et2O soln. extd. with 50 cc. 2.4N HCl, and the acidic ext. evapd. to dryness in vacuo yielded

3.0 g. 2,2-dimethyl-3-(aminomethyl)cyclobutylamine (XV). 2HCl, decompd. slowly between 250 and 300.degree. with no definite melting [benzamide deriv., m. 147.4-54.7.degree. (from EtOAc-cyclohexane), probably a mixt. of stereoisomers]. Crude XV. 2HCl (15 g.), 107 cc. 36% aq. CH₂O, and 44.7 cc. 90% HCO₂H refluxed 4 hrs., the mixt. concd. to a small vol. on a steam bath, treated with excess 40% aq. NaOH, and extd. with Et₂O, and the ext. worked up gave 10.1 g. N,N,N',N'-tetra-Me deriv. (XVI) of XV, b₅₁ 114-17.degree., n_D²⁵ 1.4482; the picrate decompd. on heating; the max. temp. at which a fresh sample survived for 20 sec. was 218.degree.. XVI (0.73 g.) in 2 cc. MeOH added with cooling to 2.8 g. MeI in 1 cc. MeOH, and the mixt. allowed to stand 12 hrs., dild. with excess EtOH, concd., and cooled gave 1.31 g. XVI. 2MeI, colorless, hygroscopic solid, m. 272.degree. (decompn.) (from abs. EtOH), also obtained in 6% yield by direct exhaustive methylation of XV. XVI (6.78 g.), 26 g. MeI, 28.0 g. AgNO₃, and 10.9 g. KOH gave in the usual manner 1.81 g. 4,4-dimethylmethylenecyclobutene (XVII); a crude sample (0.80 g.) distd. rapidly at 740 mm. from hydroquinone yielded 0.73 g. pure XVII, b. 65-5.7.degree., n_D²⁵ 1.4284. ClCH₂CCl₂CH₂ (33.3 g.) added with stirring to 45.6 g. Zn dust in 70 cc. 80% EtOH at such a rate as to maintain reflux, the mixt. refluxed 45 min., and the gaseous product passed through H₂O and CaCl₂ and then condensed yielded 11.5 g. allene (XVIII). PhC.tplbond.CH (XIX) (10.8 g.), 5 g. XVIII, and 50 mg. 1,4-naphthoquinone heated 24 hrs. in a sealed tube at 150.degree., the viscous residue (11.2 g.) (after removal of 4 g. XVIII) distd. at 0.2 mm. up to 200.degree. gave 6.1 g. distillate and 5.0 g. residue; the distillate redistd. yielded 5.6 g. unchanged XIX, b₅₀ 63-4.degree., and 0.07 g. 3-phenylmethylenecyclobutene, b₄ 5 78-9.degree., m. 10-12.degree., n_D²⁵ 1.5987. XIII (3.26 g.) in 25 cc. CCl₄ titrated at 0.degree. with 10% Br in CCl₄ consumed 0.98 molar equiv. Br; the mixt. distd. gave 2.75 g. 2,3-dibromomethylenecyclobutane (XXI), b₅ 49-50.degree., n_D²⁵ 1.5487-1.5489, and 3.42 g. 3-bromo(bromomethyl)-1-cyclobutene (XXII), b₅ 74.degree., n_D²⁵ 1.5697-1.5688. XXI reacted very slowly with NaI in Me₂CO while XXII reacted very rapidly. The distd. XXI and XXII refrigerated 4 days showed identical infrared and ultraviolet spectra; the equil. mixt. was 49% XXI and 51% XXII. XVII (0.1359 g.) consumed 0.795 cc. 1.94M Br in CCl₄. XVII (1.65 g.) gave 3.81 g. dibromide, b₅ 75-89.degree., n_D²⁵ 1.5298-1.5440, which was a mixt. of several substances. Crude dibromide from 0.1359 g. XVII treated with 2 cc. C₆H₆ and then 1 cc. 20% Me₃N in C₆H₆, and the mixt. allowed to stand overnight and evapd. to dryness in vacuo left 0.17 g. compd., Cl₁₀H₁₉Br₂N, white crystals, decompd. 182.degree.. A 50-mg. sample of the quaternary bromide treated with warm aq. Na picrate gave a picrate, Cl₁₆H₂₁BrN₄O₇, radial clusters of solid, m. 153-200.degree., was also obtained. Samples of XIII kept 12-36 hrs. in sealed ampuls at room temp. gave a colorless, transparent elastomer; the polymerization was inhibited by 2,2-diphenyl-1-picrylhydrazyl but not by hydroquinone or naphthoquinone. Polymerized XIII was insol. in CCl₄,

CHCl₃, (CH₂Cl)₂, and m-MeC₆H₄OH. XX also **polymerized** at room temp. to a viscous yellow material. XVII, on one occasion stood several days at room temp. without visible change, but another sample **polymerized** in 1 day to a white solid. XIII (about 0.24 g.) added to 0.00354 mole NaNH₂ in 5 cc. liquid NH₃, the NH₃ evapd., the residue treated with 8 cc. dry Et₂O and 4 g. powd. Dry Ice, the mixt. warmed to room temp., dild. with 10 cc. H₂O, and the aq. layer acidified to pH 2 and extd. with Et₂O did not give any material; the original Et₂O layer evapd. left 0.22 g. yellowish sticky, nonvolatile, CHCl₃-sol. **polymer** (XXIII). XIII treated with KNH₂ in liquid NH₃ gave a similar product; a small amt. of a bright blue solid pptd. on acidification of the aq. phase. XIII added to excess MeLi in 4:1 xylene-Et₂O did not evolve CH₄. A tiny stream of BF₃ passed into 0.1 cc. XIII gave a brownish, translucent **polymer** (XXIV), insol. in CCl₄ and CHCl₃. XIII gave no visible reaction with anhyd. AlBr₃. IV (101.1 g.), m. 140.4-4.6.degree., and 1.1 mole NaOEt in 500 cc. EtOH refluxed 26 hrs., and the mixt. poured into about 1.5 l. H₂O and neutralized with stirring with AcOH gave 36.1 g. 3'-oxa-2,3,5,6-dibenzospiro(bicyclo[2.2.2]octane-7,1'-cyclobutane) (XXV), m. 130.2-2.6.degree. (from EtOH). IV and iso-AmOH in iso-AmOH treated with NaCH(CO₂Et)₂ in iso-AmOH also gave XXV. Pure XXV (20 g.) heated 105 min. at 340-55.degree. under a slow stream of N gave 3.97 g. distillate; the combined products from several runs redistd. yielded 3-methylenetrimethylene oxide (XXVI), b₇₄₅ 70.0.degree., n_D₂₅ 1.4306, and a very small amt. of a white solid, identified as a peroxide, m. 125-60.degree.. V (2.05 g.), 1.32 g. Zn dust, and 30 cc. 85% EtOH refluxed 24 hrs. with stirring, the EtOH distd. off, and the residue dild. with H₂O and extd. with Et₂O yielded 1.15 g. 2,3,5,6-dibenzospiro(bicyclo[2.2.2]octane-7,1'-cyclopropane) (XXVII), m. 114.6-15.1.degree. (from EtOH); XXVII boils without decompn. at about 300.degree.; a small sample distd. through a tube at 450.degree. showed slight purple fluorescence indicating that some anthracene was formed. XXVII (0.056 g.) and 0.127 g. anthracene in 0.5 cc. C₆H₆ heated 8.5 hrs. at 180.degree. and 12 hrs. at 210.degree. in a sealed tube gave 81 mg. anthracene and 6 mg. XV. The infrared absorption spectra of XIII, XVII, XX, XXI, XXII, XXIII, XXIV, and XXVII are recorded.

CC 10 (Organic Chemistry)

=> d 128 1-18 ti

L28 ANSWER 1 OF 18 HCA COPYRIGHT 2002 ACS

TI Kinetics of the photodimerization of anthracene in an inhomogeneous polymer matrix

L28 ANSWER 2 OF 18 HCA COPYRIGHT 2002 ACS

TI "Hidden" Recording of Phase Holograms with Self-Amplification in a Polymer with Photoinduced Diffusion

- L28 ANSWER 3 OF 18 HCA COPYRIGHT 2002 ACS
TI Survey of polynuclear aromatic hydrocarbons in airborne particulates
- L28 ANSWER 4 OF 18 HCA COPYRIGHT 2002 ACS
TI Photochemical fluorescence probes: rate distributions in solid polymers
- L28 ANSWER 5 OF 18 HCA COPYRIGHT 2002 ACS
TI Latex Film Formation Probed by Nonradiative Energy Transfer: Effect of Grafted and Free Poly(ethylene oxide) on a Poly(n-butyl methacrylate) Latex
- L28 ANSWER 6 OF 18 HCA COPYRIGHT 2002 ACS
TI Photodimerization of anthryl groups attached to PMMA side chain in dilute solution
- L28 ANSWER 7 OF 18 HCA COPYRIGHT 2002 ACS
TI Influence of thermodynamic interactions on the transport process of molecular tracer in binary polymer mixtures
- L28 ANSWER 8 OF 18 HCA COPYRIGHT 2002 ACS
TI Anisotropy of free **volumes** in uniaxially oriented polymer matrix as observed by a polarization-selective photochromic reaction
- L28 ANSWER 9 OF 18 HCA COPYRIGHT 2002 ACS
TI Effects of critical concentration fluctuations on the photocyclization of a bichromophoric molecule in the one-phase region of polystyrene/poly(vinyl methyl ether) blends
- L28 ANSWER 10 OF 18 HCA COPYRIGHT 2002 ACS
TI Diffusion of substituted **anthracene** molecules in amorphous polymers. Effect of the kinetic element volume and glass transition temperature
- L28 ANSWER 11 OF 18 HCA COPYRIGHT 2002 ACS
TI Intramolecular photodimerization of bis(9-anthrylmethyl) ether in polymer bulks
- L28 ANSWER 12 OF 18 HCA COPYRIGHT 2002 ACS
TI Use of large-**volume resin** cartridges for the determination of organic contaminants in drinking water derived from the Great Lakes
- L28 ANSWER 13 OF 18 HCA COPYRIGHT 2002 ACS
TI GC/MS characterization of trace organic compounds in the ambient aerosol associated with a coal gasification plant at Kosovo, Yugoslavia
- L28 ANSWER 14 OF 18 HCA COPYRIGHT 2002 ACS
TI Mass for making a diamond-free layer or a diamond disk, where the diamond-free layer is arranged concentrically to the diamond layer

- L28 ANSWER 15 OF 18 HCA COPYRIGHT 2002 ACS
TI Structural changes in polyethylene films at small deformations
- L28 ANSWER 16 OF 18 HCA COPYRIGHT 2002 ACS
TI Enhancement of the strength and electric conductance of graphite or carbon-base materials and (or) adhesion of such materials to each other, ceramics, or metals
- L28 ANSWER 17 OF 18 HCA COPYRIGHT 2002 ACS
TI Photoconductor coatings for electrophotography
- L28 ANSWER 18 OF 18 HCA COPYRIGHT 2002 ACS
TI Acid numbers and color tests

=> d 129 1-15 ti

- L29 ANSWER 1 OF 15 HCA COPYRIGHT 2002 ACS
TI Solubilization of polycyclic aromatic hydrocarbons in F127 and P123 aqueous micellar solutions
- L29 ANSWER 2 OF 15 HCA COPYRIGHT 2002 ACS
TI Measurement of the efflux of a solid propellant for ramrocket gas generators
- L29 ANSWER 3 OF 15 HCA COPYRIGHT 2002 ACS
TI Small-Molecule Probe Diffusion in **Polymer** Solutions: Studies by Taylor Dispersion and Phosphorescence Quenching
- L29 ANSWER 4 OF 15 HCA COPYRIGHT 2002 ACS
TI Association of ClC-3 channel with Cl⁻ transport by human nonpigmented ciliary epithelial cells
- L29 ANSWER 5 OF 15 HCA COPYRIGHT 2002 ACS
TI Media effects on the kinetics of **anthracene** photooxidation in **polymers**
- L29 ANSWER 6 OF 15 HCA COPYRIGHT 2002 ACS
TI Headspace solid-phase microextraction
- L29 ANSWER 7 OF 15 HCA COPYRIGHT 2002 ACS
TI Influence of organic cosolvents on the sorption kinetics of hydrophobic organic chemicals
- L29 ANSWER 8 OF 15 HCA COPYRIGHT 2002 ACS
TI Crosslinking of polyethylene in the presence of additives. 2. Influence of additives on the formation of methane gas and crosslinking
- L29 ANSWER 9 OF 15 HCA COPYRIGHT 2002 ACS
TI Behavior of pitch during coking and the formation of electrode coke

from it in coking furnaces

L29 ANSWER 10 OF 15 HCA COPYRIGHT 2002 ACS
TI Plastic foam

L29 ANSWER 11 OF 15 HCA COPYRIGHT 2002 ACS
TI Protection of new road concrete against the effect of deicing salt

L29 ANSWER 12 OF 15 HCA COPYRIGHT 2002 ACS
TI Light-sensitive, acid-hardenable **resin** printing plates

L29 ANSWER 13 OF 15 HCA COPYRIGHT 2002 ACS
TI Mono- and difluorobutenedioic acids

L29 ANSWER 14 OF 15 HCA COPYRIGHT 2002 ACS
TI Further rough compressions to 40,000 kg./sq. cm., especially certain liquids

L29 ANSWER 15 OF 15 HCA COPYRIGHT 2002 ACS
TI Volume relationships of carbohydrates, amino acids, and hydrocarbons

=> d 130 1-18 ti

L30 ANSWER 1 OF 18 HCA COPYRIGHT 2002 ACS
TI Preparation and evaluation of octadecyl-zirconia bonded stationary phases

L30 ANSWER 2 OF 18 HCA COPYRIGHT 2002 ACS
TI Reactions of polystyryllithiums and model lithium carbanion with 9,10-bis(halomethyl)**anthracene**

L30 ANSWER 3 OF 18 HCA COPYRIGHT 2002 ACS
TI Separation of monomethyl-benz[a]**anthracene** isomers using cyclodextrin-modified electrokinetic chromatography

L30 ANSWER 4 OF 18 HCA COPYRIGHT 2002 ACS
TI Electrokinetic chromatography of twelve monomethylbenz[a]**anthracene** isomers using a **polymerized** anionic surfactant

L30 ANSWER 5 OF 18 HCA COPYRIGHT 2002 ACS
TI **Polymeric** Anionic Surfactant for Electrokinetic Chromatography: Separation of 16 Priority Polycyclic Aromatic Hydrocarbon Pollutants

L30 ANSWER 6 OF 18 HCA COPYRIGHT 2002 ACS
TI Gamma-radiolysis of quinoline in 2-propanol solution

L30 ANSWER 7 OF 18 HCA COPYRIGHT 2002 ACS
TI Modified cyanoacrylate monomers

L30 ANSWER 8 OF 18 HCA COPYRIGHT 2002 ACS
TI Nitroaminoanthraquinones

L30 ANSWER 9 OF 18 HCA COPYRIGHT 2002 ACS
TI Preparation of diphenic acid from phenanthrene

L30 ANSWER 10 OF 18 HCA COPYRIGHT 2002 ACS
TI Preparation and properties of 1,1-diaryl-1,3-butadienes

L30 ANSWER 11 OF 18 HCA COPYRIGHT 2002 ACS
TI Preparation and reactions of 1,2-dicyano-1,2-disulfonylethylenes

L30 ANSWER 12 OF 18 HCA COPYRIGHT 2002 ACS
TI Reactions with N-carbonylsuffamoyl chloride. III. Reactions with olefins and aldehydes--concerning .beta.-lactams

L30 ANSWER 13 OF 18 HCA COPYRIGHT 2002 ACS
TI Dehydrobenzene from 1,2,3-benzothiadiazole 1,1-dioxide

L30 ANSWER 14 OF 18 HCA COPYRIGHT 2002 ACS
TI Dehydration of primary and secondary meso-dihydroanthracenic alcohols

L30 ANSWER 15 OF 18 HCA COPYRIGHT 2002 ACS
TI Ozonolysis of polycyclic aromatics. VII. Dibenz[a,h]-anthracene

L30 ANSWER 16 OF 18 HCA COPYRIGHT 2002 ACS
TI Separation of isomeric menthane dicarboxylic acids

L30 ANSWER 17 OF 18 HCA COPYRIGHT 2002 ACS
TI p-Nitrophenylmaleic anhydride in the Diels-Alder reaction

L30 ANSWER 18 OF 18 HCA COPYRIGHT 2002 ACS
TI Luminescence phenomena in pyrazoline derivatives

=> d 128 2,4,8,10,17 cbib abs hitstr hitind

L28 ANSWER 2 OF 18 HCA COPYRIGHT 2002 ACS
134:318558 "Hidden" Recording of Phase Holograms with Self-Amplification in a Polymer with Photoinduced Diffusion. Mogil'nyi, V. V.; Gritsai, Yu. V. (Belarussian State University, Minsk, 220080, Belarus). Technical Physics Letters (Translation of Pis'ma v Zhurnal Tekhnicheskoi Fiziki), 27(1), 60-62 (English) 2001. CODEN: TPLEED. ISSN: 1063-7850. Publisher: MAIK Nauka/Interperiodica Publishing.

AB The possibility of minimizing the diffraction efficiency of a vol. phase holog. grating while recording in a medium with diffusion self-amplification is considered. The recording process is modeled to demonstrate that the diffraction efficiency can be varied from 0.02 to 0.003 (50-250 gain). The results of the anal. are confirmed

- by the exptl. data.
 IT 120-12-7D, Anthracene, derivs., processes
 (vol. phase holog. recording with post-exposure
 self-amplification in polymer medium contg. monosubstituted
 anthracene)
 RN 120-12-7 HCA
 CN Anthracene (8CI, 9CI) (CA INDEX NAME)



- CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)
 ST vol. phase holog. grating polymer diffusion self
 amplification
 IT Diffusion
 (light-induced; vol. phase holog. recording with post-exposure
 self-amplification in polymer medium contg. monosubstituted
 anthracene)
 IT Holographic recording materials
 (vol. phase holog. recording with post-exposure
 self-amplification in polymer medium contg. monosubstituted
 anthracene)
 IT 120-12-7D, Anthracene, derivs., processes
 9011-14-7, PMMA
 (vol. phase holog. recording with post-exposure
 self-amplification in polymer medium contg. monosubstituted
 anthracene)
 L28 ANSWER 4 OF 18 HCA COPYRIGHT 2002 ACS
 125:222993 Photochemical fluorescence probes: rate distributions in
 solid polymers. Fritz, Ralf; Kungl, Andreas; Rettig, Wolfgang;
 Springer, Juergen (Institut fuer Technische Chemie, TU Berlin,
 Strasse des 17. Juni 135, Berlin, D-10623, Germany). Chemical
 Physics Letters, 260(3,4), 409-417 (English) 1996. CODEN: CHPLBC.
 ISSN: 0009-2614. Publisher: Elsevier.
 AB Nonexponential fluorescence decays due to the photochem. reaction of
 10-cyano-9-tert-butyl-anthracene towards the Dewar isomer
 are analyzed to gain information on the free vol. of a
 polymer glass poly(butyl-methacrylate) at different temps.
 The simple model of a multiexponential fitting procedure is well
 suited to following the temp. dependence in the envelope of this
 distribution qual., but it fails to detect finer structures. More
 demanding methods (max. entropy and exponential series) result in at
 least trimodal distributions indicating preferred polymer
 free vol. voids within a broad distribution. Increasing
 temp. favors the decay time range assocd. with the largest free vol.
 void.
 CC 36-5 (Physical Properties of Synthetic High Polymers)

Section cross-reference(s): 74

L28 ANSWER 8 OF 18 HCA COPYRIGHT 2002 ACS

117:252199 Anisotropy of free **volumes** in uniaxially oriented **polymer** matrix as observed by a polarization-selective photochromic reaction. Tran Cong Qui; Tanaka, H.; Soen, T. (Dep. Polym. Sci. Eng., Kyoto Inst. Technol., Kyoto, 606, Japan). *Macromolecules*, 25(26), 7389-91 (English) 1992. CODEN: MAMOBX. ISSN: 0024-9297.

AB The anisotropy of free vols. in uniaxially oriented **polymer** matrix can be obtained from the selectivity of the photocyclization reaction of a mol. probe upon irradiation with linearly polarized light. 9-(Hydroxymethyl)-10-[(naphthylmethoxy)methyl] **anthracene** is used as a mol. probe in PMMA. The statics and kinetics of the induction of the reaction are examined upon irradiation with linearly polarized light in the direction parallel and perpendicular to the stretching direction of the polymer matrix below the glass transition temperature. The induction efficiency obtained from the two components of dichroic absorbance is quite different for these two cases. Furthermore, the parameter describing the anisotropy of free vols. calculated from the static induction efficiency is in good agreement with positron annihilation data reported recently for PMMA.

CC 36-5 (Physical Properties of Synthetic High Polymers)

IT 126666-19-1, 9-(Hydroxymethyl)-10-[(Naphthyl-methoxy)methyl] **anthracene**

(mol. probes, for determination of anisotropy of free vol. in uniaxially oriented PMMA)

L28 ANSWER 10 OF 18 HCA COPYRIGHT 2002 ACS

110:155229 Diffusion of substituted **anthracene** molecules in amorphous polymers. Effect of the kinetic element volume and glass transition temperature. Veniaminov, A. V.; Burunkova, Yu. E.; Kazannikova, A. V. (Gos. Opt. Inst. im. Vavilova, USSR). *Vysokomol. Soedin.*, Ser. B, 31(1), 68-71 (Russian) 1989. CODEN: VYSBAI. ISSN: 0507-5483.

AB The diffusion coefficients of **anthracene** derivatives (AD) in amorphous polymers at approximately 20 degrees decreased exponentially with increasing size of AD molecules for small molecules. (torsion 100-300 .ANG. 3), were independent of the AD molecule size for large molecules. (torsion 100-300 .ANG. 3), and decreased with increasing glass temperature and kinetic element volume of polymers in the order: poly(vinyl acetate) > PVC > PMMA.

IT 120-12-7D, **Anthracene**, derivatives.
(diffusion of, in amorphous polymers, effects of kinetic element vol. and glass temperature on)

RN 120-12-7 HCA

CN Anthracene (8CI, 9CI) (CA INDEX NAME)



- CC 36-8 (Physical Properties of Synthetic High Polymers)
 ST diffusion **anthracene** polymer mol size; glass temp polymer
anthracene diffusion; structure polymer **anthracene**
 diffusion
- IT Polymers, properties
 (diffusion in amorphous, of **anthracene** derivs., effects
 of kinetic element vol. and glass temp. on)
- IT Glass temperature and transition
 (of amorphous polymers, diffusion of **anthracene** derivs.
 in relation to)
- IT Diffusion
 (of **anthracene** derivs. in amorphous polymers, effects
 of kinetic element vol. and glass temp. on)
- IT Chains, chemical
 (structure of, of amorphous polymers, diffusion of
anthracene derivs. in relation to)
- IT 9002-86-2, PVC 9003-20-7, Poly(vinyl acetate) 9003-53-6,
 Polystyrene 9004-36-8 9011-14-7, Poly(methyl methacrylate)
 (diffusion in, of **anthracene** derivs., mol. size effect
 on)
- IT 120-12-7D, **Anthracene**, derivs.
 (diffusion of, in amorphous polymers, effects of kinetic element
 vol. and glass temp. on)
- L28 ANSWER 17 OF 18 HCA COPYRIGHT 2002 ACS
 68:70259 Photoconductor coatings for electrophotography. Munder,
 Johannes; Sus, Oskar (Azoplate Corp.). U.S. US 3316087 19670425, 7
 pp. (English). CODEN: USXXAM. PRIORITY: DE 19591031.
 AB Photoconductor coatings were prep'd. consisting of
 polyacrylates[-CR1(CO2R2)CH2-]n (I), where R1 is H, Me, Et, Pr, or
 Bu, and R2 is a substituted or unsubstituted aryl or heterocyclic
 radical. The monomers were prep'd. from the corresponding alcs. or
 phenols and the appropriately substituted acid chloride. E.g., to 5
 wt. parts 9-(hydroxymethyl)**anthracene**, m. 155-7.degree.,
 dissolved in 50 vol. parts anhyd. dioxane, 6.7 vol. parts Et3N was
 added and the mixt. cooled to 5-10.degree.. Phenyl-.alpha.-
 naphthylamine (0.5 wt. parts) was added, a soln. of 3.59 vol. parts
 acryloyl chloride (II) in 20 vol. parts anhyd. dioxane was slowly
 introduced with stirring, the stirring continued 20 min., and the
 mixt. allowed to attain room temp. When the mixt. was neutral it
 was poured into 500 vol. parts ice water and the product filtered.
 The product m. 105-19.degree.. To a soln. of 5.5 wt. parts the
 above comp'd. in 75 vol. parts dioxane, a 0.001 wt. part
 azobisisobutyronitrile (III) was added. The mixt. was refluxed
 during 2 hrs., cooled and poured into 1000 vol. parts ice water to

give a colorless material, which was suspended in 25 vol. parts MeOH and refluxed 10 min. The liquid was decanted hot from the undissolved resin, which solidified as it cooled to give I (R1 = 9-anthracylmethyl, R2 = H), softens at 105.degree., m. 150-60.degree.. Similarly prepd. were the following polymers (hydroxy compd., acid chloride, m.p. monomer, and softening range polymer given): 4-phenyl-7-hydroxycoumarin, II, 97-8.degree., 100-20.degree.; 4-methyl-7-hydroxycoumarin, II, 155-6.degree., 180-90.degree.; N-propyl-3-hydroxy-6-methoxynaphthalimide, II, -, 115-25.degree.; 9-hydroxyanthracene, II, 162.degree., 105-75.degree.; 2-(2-hydroxyphenyl)-6-(dimethylamino)benzothiazole, II, 88.degree., 116-20.degree.; 2-(4-hydroxyphenyl)-6-(dimethylamino)benzothiazole, II, -, 113-25.degree.; N-(hydroxymethyl)carbazole, II, 192-4.degree., 281-91.degree.; N-ethyl-4-(1-hydroxyethyl)carbazole, II, (oily), 43-140.degree.; 5-hydroxynaphthocarbazole, methacryloyl chloride (IV), 171-2.degree., 188-91.degree.; 1,3-diphenyl-2-(2-hydroxy-3-methoxyphenyl)tetrahydroimidazole, II, 17.degree., 171-300.degree.. For compds. that form a water-sol. alkali salt, a modified method was used which provided purer products than by the above method. Thus, a soln. of 25 wt. parts 1-(3-hydroxyphenyl)-2-benzoyl ethylene in 200 vol. parts H2O contg. 8.95 wt. parts NaOH was cooled to 5-8.degree., a soln. of 16.7 vol. parts II in 30 vol. parts anhyd. dioxane was added dropwise with stirring during 15 min., and the mixt. stirred 30 min. more and allowed to reach room temp. to give 23 wt. parts resin. To a soln. of 20 wt. parts resin in 300 vol. parts dioxane, 0.005 wt. part III was added, the mixt. refluxed 1-3 hrs., the cooled soln. poured into 100 vol. parts distd. H2O, and the ppt. filtered off and boiled twice with 200 vol. parts MeOH to give a colorless powder (V), softened at 170-90.degree., m. 250.degree.. Similarly were prepd. the following I (data given as above): 2-hydroxyanthracene, II, 152.degree., 200-45.degree.; 1-hydroxyanthracene, II, -, 97-120.degree.; 2-hydroxycarbazole, IV, 170-2.degree., 294-310.degree.; 1-naphthol, IV, 34-5.degree., (copolymer with styrene) 83-106.degree.; 4-hydroxystilbene, II, 106-7.degree., 116-20.degree.. Similarly, copolymers were prepd. using >1 of the starting materials. The polyacrylic acid esters are photocond., making them suitable for electrophotographic purposes. A mixt. of 0.75 wt. parts V and 0.009 wt. part tetranitrofluorene was dissolved in 15 vol. parts dioxane. The soln. was applied to a roughened Al surface. After evapn. of the solvent, the coating remained on the foil and a direct image was produced by an electrophotographic process. The dry coating was provided with a neg. elec. charge by a corona discharge from a charging device maintained at 5000 v. It was then exposed behind a master to a high-pressure Hg vapor lamp (125 w.) for 5 sec., dusted over with resin powder pigmented with carbon black, and fixed by slight heating. The sensitivity of these coatings can be increased by the addn. of optical sensitizers and activators.

NCL 096001000

CC 42 (Coatings, Inks, and Related Products)

=> d 129 1,6,12 cbib abs hitstr hitind

L29 ANSWER 1 OF 15 HCA COPYRIGHT 2002 ACS

135:77466 Solubilization of polycyclic aromatic hydrocarbons in F127 and P123 aqueous micellar solutions. Zheng, Yu-ying; Jiang, Lin-qin; Zhao, Jian-xi; Xu, Xiu-zhi (Department of Chemical Engineering, Fuzhou University, Fuzhou, 350002, Peop. Rep. China). Gaodeng Xuexiao Huaxue Xuebao, 22(4), 617-621 (Chinese) 2001. CODEN: KTHPDM. ISSN: 0251-0790. Publisher: Gaodeng Jiaoyu Chubanshe.

AB The solubilization of naphthalene, **anthracene** and pyrene, in both F127 and P123 aq. micellar solns. has been characterized by UV method. These arom. hydrocarbons were confirmed to incorporate in the micellar cores. The model of stepwise assocn. equil. was used to analyze the exptl. results and the first stepwise assocn. const. K, between solubilization monomer and vacant micelle was thus obtained. The values of K1 increased with increasing the benzene-cycle no. of the arom. hydrocarbons. The av. no. of solubilization mols. corresponding to each PO-group in the micellar cores was verified to be consistency for both F127 and P123. The vol. of the micellar core is an important factor to det. the amt. of aroms. incorporating into Pluronic micelles. The amt. was lineally enhanced with **increasing** the vol. of the micellar core. The stability in planar-ring of the mol. of polycyclic arom. hydrocarbon also affected its solubilization. It was shown by the solubilization isotherms that **anthracene** and pyrene have a higher efficiency in solubilization compared with naphthalene.

IT 120-12-7, **Anthracene**, properties

(solubilization of polycyclic arom. hydrocarbons in Pluronic aq. micellar solns.)

RN 120-12-7 HCA

CN Anthracene (8CI, 9CI) (CA INDEX NAME)



CC 36-7 (Physical Properties of Synthetic High Polymers)

ST polyethylene polypropylene glycol block micelle solubilization naphthalene **anthracene** pyrene

IT 91-20-3, Naphthalene, properties 120-12-7,

Anthracene, properties 129-00-0, Pyrene, properties

(solubilization of polycyclic arom. hydrocarbons in Pluronic aq. micellar solns.)

L29 ANSWER 6 OF 15 HCA COPYRIGHT 2002 ACS

119:19563 Headspace solid-phase microextraction. Zhang, Zhouyao; Pawliszyn, Janusz (Dep. Chem., Univ. Waterloo, Waterloo, ON, N2L 3G1, Can.). Analytical Chemistry, 65(14), 1843-52 (English) 1993.

CODEN: ANCHAM. ISSN: 0003-2700.

AB Headspace solid-phase microextn. is a solvent-free sample prepn. technique in which a fused silica fiber coated with **polymeric org. liq.** is introduced into the headspace above the sample. The volatilized org. analytes are extd. and concd. in the coating and then transferred to the anal. instrument for desorption and anal. This modification of the solid-phase microextn. method (SPME) shortens the time of extn. and facilitates the application of this method to anal. of solid samples. The detection limits of the headspace SPME technique are at ppt level when ion-trap mass spectrometry is used for the detection and are very similar to that of the direct SPME technique. A simple one-dimensional kinetic model has been developed to study the diffusion process involved in headspace SPME. The results from theor. modeling are consistent with the exptl. data. In the expts., a group of org. compds., benzene, toluene, ethylbenzene, and xylenes (BTEx), and several polynuclear arom. hydrocarbons (PAHs) in water were analyzed by the headspace SPME technique. The sampling time for BTEx was reduced to about 1 min compared to about 5 min for direct SPME sampling of the aq. phase. At ambient temp., the headspace SPME technique can be used very effectively to isolate compds. with Henry's consts. above 90 atm cm³/mol (i.e., three-ring PAHs or more volatile analytes) and can also be used to sample less volatile compds. if high sensitivity can be achieved without reaching equil. The equilibration time for less volatile compds. can be shortened significantly by agitation of both aq. phase and headspace, redn. of headspace vol., and **increase** in sampling temp.

IT 120-12-7, **Anthracene**, analysis
(preconcn. of, headspace solid-phase microextn. for)
RN 120-12-7 HCA
CN Anthracene (8CI, 9CI) (CA INDEX NAME)



CC 80-4 (Organic Analytical Chemistry)
Section cross-reference(s): 19, 38, 60, 61, 66, 68
IT **Polymers**, uses
(org. liq. coatings, for preconcn. of trace org. compds. by headspace solid-phase microextn.)
IT Coating materials
(**polymeric org. liq.**, for preconcn. of trace org. compds. by headspace solid-phase microextn.)
IT 60676-86-0, Fused silica
(fibers coated with **polymeric org. liq.**, for preconcn. of trace org. compds. by headspace solid-phase microextn.)
IT 56-55-3, Benz[a]anthracene 71-43-2, Benzene, analysis
83-32-9, Acenaphthene 85-01-8, Phenanthrene, analysis 91-20-3,

Naphthalene, analysis 95-47-6, o-Xylene, analysis 100-41-4,
 Ethylbenzene, analysis 106-42-3, p-Xylene, analysis 108-88-3,
 Toluene, analysis 120-12-7, Anthracene, analysis
 218-01-9, Chrysene
 (preconcn. of, headspace solid-phase microextn. for)

L29 ANSWER 12 OF 15 HCA COPYRIGHT 2002 ACS

65:53598 Original Reference No. 65:10001d-f Light-sensitive,
 acid-hardenable **resin** printing plates. (Kalle A.-G.). NL
 6512894 19660418, 13 pp. (Unavailable). PRIORITY: DE 19641015.
 AB Aliphatic or cyclic compds. with at least one C-linked halogen atom
 (CH3I, CBr4, 9,10-dibromoanthracene, etc.) when exposed to short
 wavelength (below 400 m.mu.) radiation cause the insolubilization of
 HCHO-urea, -melamine, -phenol, or -cresol **resins**. The 2
 components are applied to a water-resistant paper, film, or metal
 base in a common solvent and dried below 40.degree.. Fillers such
 as colloidal SiO2 or starch may be used. The unexposed coating is
 removed after the exposure and heating at 60-160.degree. for up to 2
 min. by wiping with solvent. The relief may be further hardened at
 160-200.degree., particularly for gravure etching. For example, 60
 parts by wt. CBr4 is dissolved in 800 parts by vol. Me2CO, and
 ball-milled for 12 hrs. with 100 parts by vol. of a 60% Beckurol 720
resin soln., and 8 parts by wt. colloidal SiO2. After addn.
 of 200 more parts by vol. Me2CO the dispersion
 is applied to brush-roughened Al and dried in a cold air blast. The
 exposed plate is kept 60 sec. in a drier at 130.degree. wiped
 successively with Me2CO, 20% aq. Na2SiO3, greasy ink, and a
 conventional preservative. After 2 more min. at 180.degree. it is
 ready for offset use.

IC G03F

CC 11 (Radiation Chemistry and Photochemistry)

IT Formaldehyde, **homopolymer**

(reaction products of, light-sensitive acid-hardenable
resin in printing plates contg.)

IT Acetaldehyde, tribromo- (bromal)
 (light-sensitive acid-hardenable **resin** in printing
 plates contg.)

IT 74-88-4, Methane, iodo- 523-27-3, Anthracene,
 9,10-dibromo- 558-13-4, Carbon tetrabromide 10526-39-3,
 Acetophenone, 2,2,2-tribromo-2',5'-dimethyl-
 (light-sensitive acid-hardenable **resin** in printing
 plates contg.)

IT 108-78-1, Melamine
 (reaction products of, light-sensitive acid-hardenable
resin in printing plates contg.)